

SWBAT: identify properties of magnets

Jan 4-7:20 AM

# Welcome!!!

H. Leslie Grebe

- \* Pick up:
- slip of paper (for later)

Centering

8 DAYS LEFT

Opening Questions:

Test Thursday!

Can we turn magnets on and off???

$\frac{4}{2}$     $\frac{2}{2}$

Sep 7-7:04 AM



### Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/28

Jan 19-7:12 AM

What we OBSERVED	What it MEANS	What's the BIG IDEA?
N'S ATTRACT N & N REPEL S & S REPEL	<sup>OPPOSITES</sup> FORCES! MAGNETS MAKE FORCES	MAGNETS ARE DIPOLES N'S <u>NOT</u> + -
N TO WHITE S TO RED POINTER MOVES EVEN WITHOUT TOUCHING	COMPASS REACTS TO MAGNETIC FORCES	MAGNETS MAKE MAGNETIC FIELDS!
CURRENT IN WIRE IT MADE COMPASS ARROW MOVE!	CURRENT MAKES MAGNETIC FORCES	CURRENT MAKES MAGNETIC FIELDS TOO!

Catchy Physics Phrases...

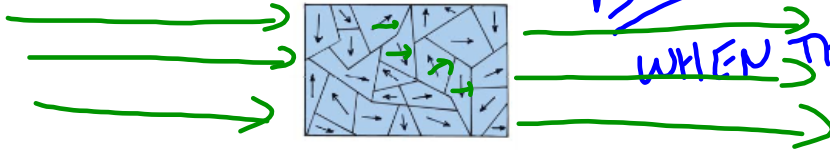
Mar 25-7:45 AM

Copper...



ATOMS POINT MANY  
DIRECTIONS & CANCEL OUT

Ferromagnetic



ARE NOT MAGNETS  
BUT BECOME MAGNETIZED  
WHEN THEY ARE IN MAG'S  
FIELD.

Only a few substances are ferromagnetic

- \* Iron (which is in steel)
- \* Nickel
- \* Cobalt, ...

Mar 28-7:37 AM

How do they get the stuff off of this magnet???



SWITCH

ELECTROMAGNET

CURRENT → MAGNETIC FIELD

Mar 28-7:38 AM

**Build your own!**

- \* Wrap **HALF** your wire around the nail
- \* When ready to experiment, touch wire to battery terminals (don't leave it on too long or wire will heat up)

Questions:

1) Which end of the compass does your nail attract?

TIP

RED

SILVER

DEPENDS  
ON DIRECTION  
ELECTRONS  
FLOW

2) About how many staples can you pick up?

TIP: 9  
: 10

16

Mar 28-7:38 AM

Now wrap the other half of the wire around.

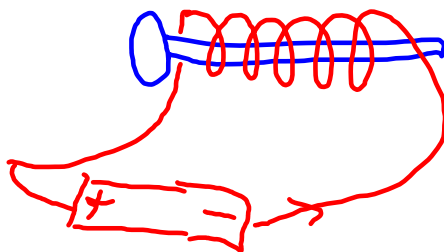
How many staples does it pick up now?

9 → 28  
16 → 47

MORE LOOPS

⇒ STRONGER

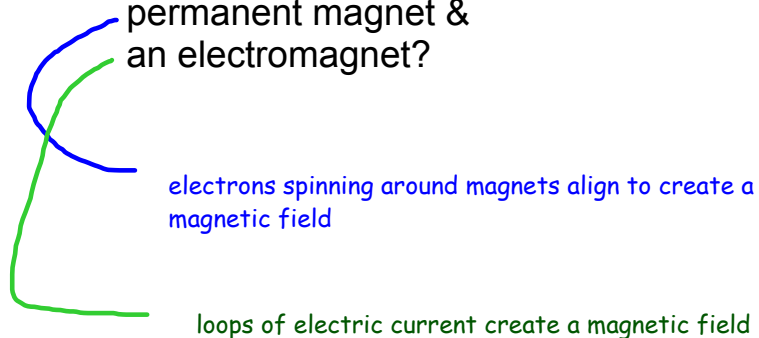
The right hand rule for solenoids...



If I curl the fingers of my right hand in the direction current flows, my thumb will point north.

Mar 28-7:39 AM

So what's the difference between a permanent magnet & an electromagnet?



=> They work the same way!!!

Mar 28-7:39 AM

### Daily 3 Questions

### CP homework - Right-hand rule practice

- \* Every day except test/project days
- \* 3 Questions on the topics of the day
- \* Main source of daily points
- \* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. Are there magnets we can turn on and off?

YES

2. What does more <sup>LOOPS</sup> turns of wire (in the same direction) do to the strength of our electromagnet?

STRONGER

3. If I curve the fingers on my right hand to follow the current, my thumb points NORTH .

Feb 18-6:59 AM